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			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/565,753

Applicant(s)

SWOBODA ET AL.

Examiner

Albert Hilton

Art Unit

4171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2007.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36, 38 and 39 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-36, 38-39 is/are rejected.
7) ☒ Claim(s) 1-39, 38-39 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 27 March 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/27/2007
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

1. This is a first action on the merits. Claims 1-36 and 38-39 are pending.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10565753, filed on 1/23/2006.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4). The examiner believes that one of the two reference characters labeled "362" in Fig. 1 was intended to be designated "361." Additionally, the reference character "64" in Fig. 2 was presumably intended to be designated "46." Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 1-39 are objected to because of the following minor informalities: the examiner suggests that the word "arrangement" in claims 1-39 should be replaced with "apparatus" for clarity. Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH (US 6,394,796) in light of EICH (US 4,712,014).

8. Regarding claim 1, SMITH discloses an arrangement (**oven 100**) comprising at least one emitter (**radiant heaters 120a-f**) that generate electromagnetic radiation; a conveying system (**assembly line, central rail 116**) that transports the object into and out of the vicinity of the emitter (**100**) (SMITH: col. 5, lines 17-24, 31-37, and Fig. 1). SMITH does not specifically disclose the presence of a motor, however, the use of a motor to change the spatial orientation of a reflector is well-known in the art, as is taught in EICH (EICH: col. 1, line 60-col.2, line 24). One of ordinary skill in the art at the time of the invention, motivated by a need to move a mirror, would have found it obvious to make use of a motor as a positioning means. Furthermore, the use of a motor, rather than a manual or hydraulic/pneumatic actuator would represent an obvious design choice to one of ordinary skill in the art.

9. Regarding claim 2, SMITH discloses an arrangement (**oven 100**) in which a first emitter (**radiant heater 120b**) extends within a plane that runs substantially parallel to a transporting plane of the conveying system (**116**), and the first emitter (**120b**) can be driven by a motor in a direction perpendicular to the transporting plane (SMITH: col. 5, lines 38-67 and Fig. 1).
10. Regarding claim 3, SMITH discloses an arrangement (**100**) comprising two further emitters (**radiant heater 120a-f**) that are arranged on both sides of a conveying stretch (**assembly line, central rail 116**) (SMITH: col 5, lines 31-37 and Fig. 1).
11. Regarding claim 4, SMITH discloses two further emitters (**radiant heaters 120a-f**) that can be driven by a motor in directions perpendicular to a conveying direction of the conveying system (SMITH: col. 5, lines 45-56 and Fig. 1).
12. Regarding claim 5, SMITH discloses two further emitters that can be driven by a motor in directions perpendicular to a conveying direction of the conveying system (SMITH: column 5, lines 38-67 and Fig. 1).
13. Regarding claim 6, SMITH discloses an arrangement (**oven 100**) in which emitters (**radiant heater 120a-f**) are secured to a frame (**support bar 118**) that spans a conveying stretch (**central rail 116**), but does not specifically describe a gantry-like support system (SMITH: col. 5, lines 38-45 and Fig. 5). However, positioning the emitters in a frame in a bridge-like gantry would represent a mere rearrangement of parts, and would not distinguish the instant application from the prior art in a patentably distinct way (See MPEP 2144.04).

14. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH and EICH, as applied above, and further in view of FEROCE (European Patent No. 0851193).

15. Regarding claim 7, SMITH discloses an arrangement (**100**) comprising an emitter (**radiant heater 120a-f**) whose spatial orientation can be altered (SMITH: col. 5, lines 38-67 and Fig. 1). However, SMITH does not disclose a control device by which the orientation of the emitter (**120a-f**) can be automatically adapted to the contours of the object. However, FEROCE describes a paint curing station in which a control device (**sensor, software, computer memory**) can measure the contours of an object and adjust the position of emitters (**heating panels 18, 19**) accordingly (FEROCE, col. 2, lines 2-10). FEROCE further teaches that the use of such a control system improves the uniformity of the emitting operation and minimizes the energy spent (FEROCE: col. 1, lines 22-48). One of ordinary skill in the art at the time of the invention, motivated by a need to expose an object to an emitter in a uniform and cost-efficient way would have found it obvious to make use of the control system taught in FEROCE in the arrangement of SMITH.

16. Regarding claim 8, the addition of the control system of FEROCE into the arrangement of SMITH would allow the spatial orientation of an emitter to be altered in such a way as to ensure that the amount of electromagnetic radiation per unit area and its intensity does not fall below a predetermined threshold value during the conveying movement of an object (FEROCE: col. 3, line 40-col. 4, lines 2).

17. Regarding claim 9, the control device of FEROCE (**sensor, software, computer memory**) is designed so that the amount of electromagnetic radiation incident per unit area on the material remains substantially constant (FEROCE: col. 4, lines 3-21).

18. Regarding claim 10, the control device of FEROCE comprises a memory (FEROCE: col. 2, lines 2-10).

19. Regarding claim 11, FEROCE discloses a measuring station in the conveying path of the object (**sensor**) by means of which the spatial data of the object can be acquired (FEROCE: col. 3, lines 50-55). Although FEROCE does not explicitly specify the position of the measuring station, said measuring station would inherently need to be placed upstream from the emitters in order for the sensor to send a signal to the control system to adjust the emitters.

20. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH, EICH, FEROCE, as applied above, and further in view of BAUER (U.S. 5,871,236). Regarding claim 15, FEROCE discloses an ultrasonic sensor rather than an optical scanner comprising an infrared light source (FEROCE: col. 3, lines 52-53). However, it was known in the art at the time of the invention that an optical scanner comprising an infrared light source can perform a position-detection function equivalent to that of an ultrasonic sensor. BAUER teaches that both ultrasonic and infrared sensors can be used to measure the position of an object (BAUER: col.5, lines 4-13). The use of an infrared sensor instead of a ultrasonic sensor therefore represents an art-recognized equivalent used for the same function, and does not distinguish the instant application from the prior art in a patentably distinct way (see MPEP 2144.06).

21. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH, EICH, and FEROCE, and further in view of BRAMM (US 4,763,032). Regarding claim 12, FEROCE discloses an ultrasonic sensor rather than a light barrier (FEROCE: col.3, lines 52-53). However, it was known in the art at the time of the invention that a light barrier sensor can perform a position-detection function equivalent to that of an ultrasonic sensor, as evidenced by BRAMM, which states that the sensors used in a position-sensing application are "preferably wither infrared light barriers or ultrasonic barriers." (see BRAMM: col.7, lines 36-40 and col.8, lines 9-21). The use of a light barrier sensor instead of a ultrasonic sensor therefore represents an art-recognized equivalent used for the same function, and does not distinguish the instant application from the prior art in a patentably distinct way (see MPEP 2144.06).

22. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH, EICH, and FEROCE, as applied above, and in further light of POWELL (US 4,958,306) .

23. Regarding claims 13 and 14, FEROCE discloses an ultrasonic sensor rather than a light barrier (FEROCE: col. 3, lines 52-53). However, it was known in the art at the time of the invention that either a video camera or an optical sensor can perform a dimensional metrology function that is equivalent to that performed by the ultrasonic sensor of FEROCE. As an example, POWELL teaches the use of ultrasonic sensors to measure the height profile of a surface, and also teaches that video cameras can also be used to perform the same task (POWELL: col.1, lines 50-65, and col. 2, lines 7-19). The use of a video camera instead of a ultrasonic sensor therefore represents an art-

recognized equivalent used for the same function, and does not distinguish the instant application from the prior art in a patentably distinct way (see MPEP 2144.06).

24. Further, in regard to claim 13, FEROCÉ discloses a computer memory and software associated with the ultrasonic sensor (FEROCÉ: col.2, lines 2-10), and would therefore have been able to perform a digital image recognition function. Note that the manner of operating an apparatus does not distinguish an apparatus claim from the prior art (see MPEP 2114).

25. Claims 16-21,24,27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH and EICH and further in view of (BUBLEY, US 4,646,446) and COLEMAN (US 3,790,801).

26. Regarding claim 16, SMITH discloses a housing (**oven 100**) into which an object can be introduced and an emitter (**radiant heaters 120a-f**) (SMITH: col.5, lines 18-37), but does not disclose a housing that is gas-tight and impermeable to electromagnetic radiation. However, BUBLEY describes a UV curing station with a housing (**15**) into which an object can be placed, an emitter (**UV bulb**), and a light shield (**22**) and reflector (**18**) (that renders the housing impermeable to electromagnetic radiation (BUBLEY: col. 2, lines 29-37, 56-55, and Fig. 3). BUBLEY further teaches that UV light is harmful to human eyes (BUBLEY: col. 2, lines 61-65). One of ordinary skill in the art at the time of the invention, motivated, by a need to avoid injuring workers near the curing facility, would have found it obvious to place the light shield of BUBLEY into the housing of SMITH, with the obvious/expected result that the shield would prevent UV rays from harming nearby workers.

27. Further regarding claim 16, SMITH does not specifically disclose an apparatus that is gas-tight. However, COLEMAN discloses a curing station with an emitter that is gas-tight (COLEMAN: col. 6, lines 1-12). COLEMAN further teaches that the composition of gas inside the housing (**chamber 1, 10**) of a curing station can affect the rate of curing reactions, and that toxic byproducts such as ozone are often produced during the curing process (COLEMAN: col. 1, lines 34-54). One of ordinary skill in the art at the time of the invention, motivated by a need to prevent toxic gases from escaping from a curing booth, and also to control the rate of reactions occurring inside the booth, would have found it obvious to incorporate COLEMAN's gas-tight housing in the apparatus of SMITH.

28. Regarding claims 17-19, the use of COLEMAN's gas-tight chamber in the apparatus of SMITH would allow for a protective gas to be fed into the interior (**chamber 1, 10**) (COLEMAN: col. 2, lines 35-54). Said gas could be heavier or lighter than air.

29. Regarding claim 20, COLEMAN discloses an inlet (**gas distribution tube 13**) for gas provided in the immediate vicinity of an emitter (**lamp 2**) (COLEMAN: column 2, lines 35-54 and Fig. 2). The use of COLEMAN's gas-tight chamber in the apparatus of SMITH would therefore meet the limitations of claim 20.

30. Regarding claim 21, the housing (**oven 100**) is covered with a reflecting layer (**steel**) in the vicinity of an emitter (**radiant heater 120a-f**) (SMITH: col. 5, lines 10-11).

31. Regarding claim 24, COLEMAN discloses a container (**inner chamber 10**) open to a transporting plane (**openings 11, 11'**) arranged within the housing (**outer chamber 1**) that can be filled with a protective gas (COLEMAN, column 2, lines 35-54).

32. Regarding claim 27, COLEMAN discloses a housing in which a device (**gas distribution tubes 13**) is provided for removing oxygen from the atmosphere contained within the housing (COLEMAN: col.2, lines 16-25 and col. 2 lines 59-63).

33. Regarding claim 28, COLEMAN teaches that removing oxygen from the atmosphere in the housing is advantageous because it prevents hazardous gases from forming during the curing process and also allows for more precise control over some curing reactions (COLEMAN: col. 1, lines 39-44). COLEMAN further discloses a means of removing oxygen from the oxygen from the housing by introducing an inert purging gas (COLEMAN: col. 2, lines 16-25). One of ordinary skill in the art at the time of the invention, would have found it obvious to incorporate the oxygen removal means of COLEMAN into the housing of SMITH because of the expectation of successfully reducing the formation of hazardous gases.

34. Regarding claims 29-30, COLEMAN does not disclose the use of catalytic binding, filters that absorb oxygen, or filters that adsorb oxygen. However, the use of such alternate means of oxygen removal would represent the substitution of art-recognized equivalents for the same purpose, and would therefore fail to distinguish the instant application above the prior art in a patentably distinct way (see MPEP 2144.06).

35. Claims 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH (US 6,394,796) in light of EICH (US 4,712,014). Regarding claims 33-35, SMITH

discloses a zone (**oven 100**) that can be used as a preheating zone for removing solvent of gelling pulverulent material, or as a post-heating zone for hardening (SMITH: col.8, lines 5-14).

36. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH and EICH, as applied above, and further in view of FEROCE (European Patent No. 0851193). Regarding claim 32, FEROCE discloses a moveable reflector (**aluminum sheet 47**) associated with an emitter (**heating panel 15, 17, 18**) on the side facing away from the object (FEROCE: col.3, lines 15-26 and Fig. 5).

37. Claims 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH and EICH and further in view of (BUBLEY, US 4,646,446) and COLEMAN (US 3,790,801).

38. Regarding claims 38-39, COLEMAN describes the use of nitrogen as a purge gas, but does not disclose the use of carbon dioxide or helium. However, the use of such alternative purge gases would represent the substitution of art-recognized equivalents for the same purpose, and would therefore fail to distinguish the instant application above the prior art in a patentably distinct way (see MPEP 2144.06).

39. Regarding claim 36, SMITH describes the use of emitters (**radiant heaters**), but does not specify what wavelength of radiation is emitted. However, the use of UV lamps to photocure coatings is well known in the art, as is taught in COLEMAN (COLEMAN: col.1, lines 15-27). One of ordinary skill in the art at the time of the invention, motivated by a need to cure an object with a UV-curable coating, would have

found it obvious to incorporate the UV lamps of COLEMAN into the curing apparatus of SMITH.

40. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH, EICH, BUBLEY and COLEMAN, as applied above, and further in light of TERASHI (US 5,532,043) and DAVENPORT (US 5,101,325). While SMITH discloses the use of a reflecting layer, it does not specify an uneven layer or a layer including aluminum foil (SMITH: col. 5, lines 10-11). However, it was known in the art at the time of the invention that an uneven metal foil provides a diffuse reflection of light (TERASHI: col.2, lines 1-4). Furthermore, it was known that a chamber with a diffusely reflecting surface allows for the uniform illumination of an object (DAVENPORT: col.2, line 55-col. 3, lines 15).

41. One of ordinary skill in the art at the time of the invention, motivated by a desire to uniformly cure objects in a curing station would have found it obvious to use the uneven aluminum foil layer of TERASHI as a reflecting layer in the invention of SMITH, with the reasonable expectation that such a layer would provide a diffuse reflection and uniformly illuminate the objects in the station.

42. Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH, EICH, BUBLEY and COLEMAN, as applied above and further view of FOLSOM (US 4,111,753). Regarding claim 25, SMITH discloses housing that meets the limitations of claim 16, but does not disclose a housing with a lock for introducing and removing an object at the inlet or outlet of a chamber. However, the use of such a lock to introduce samples is known in the art, as demonstrated by FOLSOM. FOLSOM

discloses a lock (**airlock**) such that objects can be introduced into an adjoining housing (**chamber**) (FOLSOM: column 3, lines 61-68). FOLSOM teaches that such a lock enables objects to be introduced without exposing the housing to the surrounding atmosphere (FOLSOM: column 3, lines 61-68). One of ordinary skill in the art at the time of the invention would have found it obvious to add the locks of FOLSOM to the housing of SMITH, with the expected result that such an addition would allow for objects to be introduced into the housing while maintaining a reduced oxygen level inside the housing. Regarding claim 26, the lock of FOLSOM comprises an inlet for protective gas (**gas inlet 124**) within the entry lock such that a cavity present in the object could be flushed out with a protective gas.

43. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over SMITH and EICH, as applied above, taken with UESAKI (US 4,928,040). SMITH discloses an emitter (**radiant heaters 120a-f**) (SMITH: col. 5, lines 18-37), but does lacks use of a reflector whose shape can be altered to change the incoming radiation. However, such reflectors are well-known in the art, as disclosed by UESAKI, which describes a reflector (**100**) that "can be formed in another shapes freely in accordance with the desired directions or configurations of the rays to be reflected." (UESAKI: column 3, lines 10-17. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to have modified the arrangement of SMITH by adding the flexible reflectors of UESAKI, because of the expectation of successfully controlling the distribution of radiation in the curing booth for more uniform curing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert Hilton whose telephone number is (571)-270-5519. The examiner can normally be reached on Monday through Friday, with alternate Fridays off, 8:00-4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Barbara Gilliam can be reached on 571-272-1330. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Albert Hilton
Examiner
Art Unit 4171

/Albert Hilton/
Examiner, Art Unit 4171

/Diana Dudash/
Primary Examiner